



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

AUG 6 2004

CECW-SAD (1105-2-10a)

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on ecosystem restoration improvements for the southern Indian River Lagoon area, located in Martin, St. Lucie, and Okeechobee Counties, Florida. It is accompanied by the report of the district and division engineers. These reports are in partial response to Section 309(l) of the Water Resources Development Act (WRDA) of 1992, Section 528 of the WRDA of 1996, and Section 601 of the WRDA of 2000 which authorized studies for the purpose of restoring, preserving, and protecting the south Florida ecosystem while providing for other water-related resource needs of the region, including water supply and flood protection.
2. The need for the Indian River Lagoon-South (IRL-S) project was initially identified in the 1994 reconnaissance report for the Central and Southern Florida (C&SF) Project Comprehensive Review Study. The Federal interest for improvements within the IRL-S was further supported when the recommendations of the Comprehensive Everglades Restoration Plan (CERP), approved by Congress in WRDA 2000, included authorization of the C-44 component of the IRL-S. Specifically, there is a great level of certainty with respect to achievement of early and sustainable benefits to the Everglades ecosystem. The levels of detail of this study enable confident formulation of the recommended plan.
3. Further, the study was well underway when WRDA 2000 identified additional requirements for implementing components of the CERP, including a new decision document known as a Project Implementation Report (PIR). The requirements of a PIR as required by WRDA 2000 are addressed in this report.
4. The PIR recommends a project that supports the goals and objectives of the CERP. The recommended project optimizes contributions towards the goals and purposes of the CERP. Scientists have identified the large spatial extent of south Florida wetlands as one of the defining characteristics of the pre-drainage ecosystem. Currently in south Florida roughly 50 percent of the pre-drainage wetland area and 90 percent of pinelands have been lost to development. The IRL-S watershed provides a unique opportunity for rehydration and habitat restoration due to the current availability of large tracts of land. The IRL-S proposed improvements will help meet the system-wide CERP goal (i.e., increase the spatial extent of wetland/upland mosaic) that may be

CECW-SAD

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

more difficult, if not impossible, to do in the more populated areas to the south. The reporting officers have indicated that strong development pressures in this area make it critical that we move forward with restoration of these areas, since delay is likely to mean a lost opportunity. The recommended plan will also help meet the water quality goals of Lake Okeechobee which, in turn, will have a positive affect on natural areas downstream of the lake. The IRL-S has the potential to supply a substantial amount of clean freshwater, which can be delivered to Lake Okeechobee, Palm Beach County, or locations farther south in the Everglades system.

5. Indian River Lagoon is an estuary of national significance. The hydrologic connection of the lagoon to the C&SF flood control and drainage project, regional development, and operations of the C&SF system has caused significant degradation of the riverine and estuarine ecosystem and deprived the Everglades of much of the pre-drainage mosaic of wetlands and uplands that characterized south Florida and which are essential to the viability and sustainability of the ecosystem. Regional development, drainage and navigation improvements, including connection of the St. Lucie River to the Okeechobee Waterway and other operations of the C&SF system, led to discharges of large volumes of freshwater to the estuary. Along with the freshwater discharges have come muck deposits, other sediments and excessively high levels of nutrients including phosphorous and nitrogen. The large quantity of muck that has accumulated in the estuary impedes penetration of sunlight and reduced oxygen levels in the water column eliminating native seagrasses and oyster beds. The estuary also is no longer capable of supporting the rich assemblage of invertbrates, fishes and wildlife that made it renowned. Because so much of the income of Martin and St. Lucie Counties relies on recreational and commercial fishing and other marine-related activities, further degradation of the lagoon ecosystem would have a direct adverse impact on the regional economy. The recommended plan of the IRL-S study would independently realize 88 percent of estuarine benefits and 100 percent of the watershed benefits in the IRL-S area without the implementation of other CERP components while it supports the goals and objectives of the CERP. Realization of the remaining 12 percent of estuarine habitat benefits will not occur until other CERP components that affect Lake Okeechobee are implemented.

6. The district and division engineers recommend authorization of a plan of improvement for the IRL-S that will increase the spatial extent of wetlands and restore the degraded estuarine and watershed ecosystems of the St. Lucie River and estuary and the southern Indian River Lagoon. The recommended plan provides for the following features:

a. Reservoirs. Construction and operation of four new above-ground reservoirs, and their connecting canals, control structures, levees and pumps providing approximately 130,000 acre-feet of storage. These facilities will capture water from the C-44, C-23, C-24, and C-25 canals of the C&SF project, reducing extreme peaks of freshwater discharge and delivery of suspended sediment and muck to the estuary.

b. Stormwater Treatment Areas (STA). Construction and operation of four new stormwater treatment areas with a storage capacity of approximately 35,000 acre-feet to reduce delivery of

CECW-SAD

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

sediment, phosphorus, and nitrogen to the estuary. Two STA's will be provided in the C-44 basin: One will be in the C-23/24 basin, and one will be in the C-25 basin.

c. Natural Storage and Treatment Areas and North Fork Floodplain Restoration. Restoration of approximately 92,000 acres of upland/wetland mosaic by ditch plugging, berm construction and periodic fire maintenance and exotic plant maintenance at three locations in the watershed (Palmar, Allapattah, and Cypress Creek/Trail Ridge). This will provide 30,000 acre-feet of storage, nutrient load reduction, and habitat improvement. About 3,100 acres of floodplain along the North Fork of the St. Lucie River will receive diverted freshwater flows and will link the watershed to the estuary. This project feature will be further optimized during preconstruction engineering and design phase of the project.

d. Diversion. Redirection of approximately 64,500 acre-feet of water from the C-23/24 basin to the North Fork of the St. Lucie River. Residual flows from C-23 will be diverted to C-44 for discharge into the South Fork of the St. Lucie River or Lake Okeechobee. These changes will mimic historic flow patterns and reduce damage associated with high freshwater discharges to the middle estuary.

e. Muck Removal and Habitat Improvement. Removal of approximately 7,900,000 cubic yards of muck from the North and South Forks of the St. Lucie River and the middle estuary and placement in a confined upland disposal site. Muck removal will create about 2,650 acres of clean substrate suitable for recolonization of bottom-dwelling organisms. Oyster shell, reef balls, and artificial submerged aquatic vegetation will be placed near the muck removal sites to create an additional 90 acres of habitat.

7. The first cost of the recommended plan, based on October 2003 price levels, is estimated to be \$1,210,608,000. The scale of the recommended plan features was based on cost effectiveness and incremental cost analysis. The recommended plan is the national ecosystem restoration plan and is justified by restoring approximately 92,130 acres of wetlands and uplands (53,683 average annual watershed habitat units), restoring approximately 36,403 acres of aquatic riverine and estuarine habitat (approximately 4,053 average annual habitat units), and 3,100 acres of floodplain habitat (approximately 2,438 average annual floodplain habitat units). An estimated \$6,100,000 in average annual national economic development benefits for agricultural water supply are incidental to the ecosystem restoration purpose of the plan.

8. Section 601(b)(2)(C)(i) of WRDA 2000 specifically authorized the C-44 Basin Storage Reservoir component of the recommended plan for IRL—S at a total cost of \$112,562,000 (October 1999 costs). Reassessment of the needs and outputs of the C-44 basin area during the completion of the PIR for IRL-S has resulted in substantial change to this component of the plan. The recommended C-44 basin features include a modified storage reservoir, as well as stormwater treatment and natural storage areas, which together function to provide a cost effective solution and to meet the needs of the St. Lucie Estuary and the ecosystem at large. Hence, the reporting officers have recommended that the C-44 Basin Storage Reservoir

CECW-SAD

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

authorized in WRDA 2000 be deauthorized. The reporting officers also determined that the unconstructed irrigation and flood control features of the C&SF project in Martin and St. Lucie Counties authorized by Section 203 of the Flood Control Act of 1968 are no longer needed due to changed conditions and the implementation of the recommended IRL-S plan. The reporting officers recommend that these features be deauthorized.

9. In addition to the modified C-44 component features, the remaining components included in the IRL-S recommended plan and previously described in the Comprehensive Plan, require specific authorization in accordance with Section 601(d). In accordance with the cost-sharing requirements of Section 601(e) of WRDA 2000, the Federal cost of the recommended plan would be approximately \$605,304,000 and the non-Federal cost would be approximately \$605,304,000. Within these costs, the estimated lands, easements, right-of-way, disposal, and relocation costs for the recommended plan are \$698,936,000. Credit for the value of the lands, easements rights of way required for the Project shall be in accordance with the terms recommended in the PIR. Further, I find the water quality treatment features included in the IRL-S Plan are not part of the Everglades Construction Project and are essential to Everglades restoration consistent with Section 528(e)(2)(B) of WRDA 1996 and are eligible for 50-50 cost sharing. The estimated annual costs for operation maintenance, repair, replacement, and rehabilitation (OMRR&R) are \$6,145,000, which includes monitoring and adaptive management activities recommended by the reporting officers to ensure success of the project at an estimated average annual cost of \$1,955,000. The project level monitoring during the construction phase is estimated at \$12,619,800. As a component of the CERP program, the interagency/interdisciplinary scientific and technical team formed to ensure that system-wide goals are met will participate in the annual monitoring within the estuary to assess system-wide changes. In accordance with sections 601(e)(4) and 601(e)(5)(D), OMRR&R costs and monitoring and adaptive management and monitoring costs will be shared equally between the Federal Government and the non-Federal sponsor.

10. Section 601(e)(5)(B) of WRDA 2000 authorizes credit toward the non-Federal share for non-Federal design and construction work completed during the period of design or construction, subject to the execution of the design or project cooperation agreement, and subject to a determination by the Secretary that the work is integral to the project. The Allapattah-Natural Storage and Treatment Area components of the recommended plan, with an estimated first cost of \$179,542,000 is being considered for implementation by the non-Federal sponsor, the South Florida Water Management District (SFWMD), using Wetlands Reserve Program funds provided by the U.S. Department of Agriculture under the authority of the Farmland Security and Rural Investment Act of 2002. The reporting officers conclude that it is in the best interest of the Federal Government for this component of the plan to be implemented expeditiously through the Wetlands Reserve Program because of the early benefits to several federally listed threatened and endangered species and the early water quality benefits to the Indian River Lagoon. The reporting officers recommend that the SFWMD be credited for construction activities they complete under the Wetlands Reserve Program and associated with the project cooperation agreement, including those completed in advance of executing a project cooperation agreement

CECW-SAD

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

for the Indian River Lagoon project, subject to: (a) written certification by the Secretary of the U.S. Department of Agriculture that use of the Wetlands Reserve Program funds towards the non-Federal share of a Federal project is permitted; (b) determination by the Secretary of the Army that those restoration activities are necessary for a reasonable cost and are integral to the CERP; and (c) that the restoration activities have been constructed in accordance with applicable Federal and State laws.

11. The reporting officers also note that the non-Federal sponsor is exploring opportunities to expedite implementation of the modified C-44 basin reservoir and stormwater treatment area components of the recommended plan, including the formation of public-private partnerships. These public-private partnerships may involve the non-Federal sponsor entering into agreement(s) with private entities for the provision of services that may include designing, building, operating, and financing these components. The reporting officers conclude that it is in the best interest of the Federal Government that the IRL-S component of the CERP be implemented expeditiously to realize the benefits to the St. Lucie Estuary, Indian River Lagoon and Lake Okeechobee. The reporting officers recommend that the non-Federal sponsor be credited for all reasonable, necessary, auditable, and allocable costs associated with early implementation of C-44 Basin components, including those incurred under a public-private partnership and those completed in advance of executing a project cooperation agreement for the Indian River Lagoon project, subject to: (a) determination by the Secretary of the Army that those restoration activities are necessary and integral to the Indian River Lagoon – South Project; and (b) that the restoration activities have been constructed in accordance with U.S. Army Corps of Engineers construction standards and applicable Federal and State laws.

12. Washington level review indicates that the plan recommended by the reporting officers is environmentally justified, technically sound, cost effective and socially acceptable. The plan conforms with essential elements of the U.S. Water Resources Counsel's Economic and Environmental Principles for Water and Related Land Resources Implementation studies and complies with other administration and legislative policies and guidelines. Also, the views of interested parties, including Federal, State, and local agencies have been considered. Comments generated by the State of Florida were resolved through direct negotiations with the Office of the Assistant Secretary of the Army for Civil Works.

13. I concur in the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the recommended plan described herein for environmental restoration be authorized for implementation as a Federal project, with such modifications as in the discretion of the Chief of Engineers may be advisable, and subject to cost-sharing, financing, and other applicable requirements of Section 601 of WRDA 2000, and in accordance with the following requirements which the non-Federal sponsor must agree to prior to project implementation:

CECW-SAD

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

- a. Provide 50 percent of total project costs consistent with the provisions of Section 601(e) of the Water Resources Development Act of 2000 including authority to perform design and construction of project features consistent with Federal law and regulation;
- b. Provide all lands, easements, and rights-of-way, including suitable borrow and dredged or excavated material disposal areas, and perform or assure the performance of all relocations determined by the Government to be necessary for the construction, operation, and maintenance of the project;
- c. Provide or pay to the Government the cost of providing all retaining dikes, wasteweirs, bulkheads, and embankments, including all monitoring features and stilling basins, that may be required at any dredged or excavated material disposal areas required for the construction, operation, and maintenance of the project;
- d. Give the Government a right to enter, at reasonable times and in a reasonable manner, upon land that the local sponsor owns or controls for access to the project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, maintaining, repairing, replacing, or rehabilitating the project;
- e. Assume responsibility for operating, maintaining, replacing, repairing, and rehabilitating (OMRR&R) the project or completed functional portions of the project, including mitigation features, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and State laws and specific directions prescribed in the OMRR&R manuals and any subsequent amendments thereto. Cost sharing for OMRR&R will be in accordance with Section 601 of WRDA 2000. Notwithstanding section 528(e)(3) of the WRDA of 1996 (110 Stat. 3770), the non-Federal sponsor shall be responsible for 50 percent of the cost of OMRR&R activities authorized under this section;
- f. Unless otherwise provided for in the statutory authorization for this project, comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended, and Section 103 of the WRDA of 1986, Public Law 99-662, as amended which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;
- g. Hold and save the Government free from all damages arising for OMRR&R of the project and any project-related betterments, except for damages due to the fault or negligence of the Government or the Government's contractors;
- h. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project to the extent and in such detail as will properly reflect total project costs;

CECW-SAD

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

i. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601-9675, that may exist in, on, or under lands, easements or rights-of-way necessary for the construction, operation, and maintenance of the project; except that the non-Federal sponsor shall not perform such investigations on lands, easements, or rights-of-way that the Government determines to be subject to the navigation servitude without prior specific written direction by the Government;

j. Assume complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or right-of-ways that the Government determines necessary for construction, operation, or maintenance of the project;

k. As between the Government and the Non-Federal Sponsor, the Non-Federal Sponsor shall be considered the operator of the Project for purposes of CERCLA liability. To the maximum extent practicable, the Non-Federal Sponsor shall operate, maintain, repair, replace, and rehabilitate the Project in a manner that will not cause liability to arise under CERCLA;

l. Prevent obstructions of or encroachments on the project (including prescribing and enforcing regulations to prevent such obstruction or encroachments) which might reduce ecosystem restoration benefits, hinder operation and maintenance, or interfere with the project's proper function, such that as any new developments on project lands or the addition of facilities which would degrade the benefits of the project;

m. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public law 91-646, as amended by title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 CFR part 24, in acquiring lands, easements, and rights-of-way, and performing relocations for construction, operation, and maintenance of the project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said act;

n. Comply with all applicable Federal and State laws and regulations, including, but not limited to: Section 601 of the Civil Rights Act of 1964, PL 88-352 (42 U.S.C. 2000d) and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army;" and all applicable federal labor standards requirements including, but not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 [revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a *et seq.*), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c)];

CECW-SAD

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

o. Comply with Section 106 of the National Historic Preservation Act in completion of all consultation with the Florida State Historic Preservation Officer and as necessary the Advisory Council on Historic Preservation prior to construction as part of the preconstruction engineering and design phase of the project;

p. Provide 50 percent of that portion of total cultural resource preservation mitigation and data recovery costs attributable to the project that are in excess of 1 percent of the total amount authorized to be appropriated for the project;

q. Do not use Federal funds to meet the non-Federal sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized and in accordance with Section 601 (e)(3) of the WRDA of 2000;

r. The Non-Federal Sponsor shall maintain an appropriate quantity, quality, timing, and distribution of water to ensure the restoration, preservation, and protection of the natural system [meaning all land and water managed by the Federal Government or the State within the South Florida ecosystem, including, but not limited to, water conservation areas; sovereign submerged land; Everglades National Park; Big Cypress National Preserve; other Federal and State (including a political subdivision of the State) land that is designated and managed for conservation purposes; the contiguous near-shore coastal water of South Florida; and any tribal land that is designated and managed for conservation purposes, as approved by the tribe] for so long as the Project remains authorized. This quantity, quality, timing, and distribution of water shall meet applicable water quality standards and be consistent with the natural system restoration goals and objectives of the Comprehensive Everglades Restoration Plan, as the Plan is defined in the programmatic regulations. In fulfillment of this obligation, the Non-Federal Sponsor shall:

(1) Ensure, through appropriate and legally enforceable means under Florida law, that the quantity, quality, timing, and distribution of water, which this PIR identifies is available to the St. Lucie River and southern Indian River Lagoon and is necessary to achieve the restoration goals and objectives for the St. Lucie River and southern Indian River Lagoon, will be available to the St. Lucie River and southern Indian River Lagoon at the time the Project becomes operational and will remain available to the St. Lucie River and southern Indian River Lagoon for so long as the Project remains authorized.

(2)(a) Prior to the execution of the project cooperation agreement, reserve from the additional water that will be made available by implementation of the Project the water identified in this PIR determined to be necessary to achieve the restoration goals and objectives for the St. Lucie River and southern Indian River Lagoon and the natural system.

(2)(b) After the Project Cooperation Agreement is signed and the Project becomes operational, make such adjustments to this reservation of water that are determined under the

CECW-SAD

SUBJECT: Central and Southern Florida, Indian River Lagoon—South

programmatic regulations to be necessary to achieve the restoration goals and objectives for the St. Lucie River and southern Indian River Lagoon and the natural system.

(3) Provide the Government with written certification that the requirements of subparagraphs 1 and 2 of this paragraph have been fulfilled.

(4) For so long as the Project remains authorized, notify and consult with the Secretary of the Army should any change in the reservation of water or other legally enforceable means of protecting water be proposed, so the Government can assure itself that the changed reservation or legally enforceable means of protecting water conforms with the State's obligations under this paragraph and continues to ensure that the appropriate, quantity, quality, timing, and distribution of water is dedicated and managed to achieve the restoration goals and objectives for the St. Lucie River and southern Indian River Lagoon and the natural system. Any change to a reservation of additional water made available by implementation of this Project shall require an amendment to the project cooperation agreement.

14. The recommendation contained herein reflects the information available at this time and current departmental policies governing formulation of individual projects. It does not reflect program and budgeting priorities in the formulation of a national civil works construction program nor the perspective of higher review levels within the executive branch. Consequently, the recommendation may be modified before it is transmitted to the Congress as a proposal for authorization and implementation funding. However, prior to transmittal to the Congress, the non-Federal sponsor, the State, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.



CARL A. STROCK
Lieutenant General, U.S. Army
Chief of Engineers